# Firmware Updates for Datacenters and Clusters Using the Dell Management Plug-in for VMware vCenter

*This Dell technical white paper describes how to use the Dell Management Plug-in for VMware vCenter to perform firmware updates for datacenters and clusters onto Dell PowerEdge 11th generation or later host systems.*

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# Executive summary

The Dell Management Plug-in for VMware vCenter is a virtual appliance that streamlines tools and tasks associated with management and deployment of Dell servers in your virtual environment. It reduces complexity by natively integrating the key management capabilities into the VMware vSphere Client console. It minimizes risk with hardware alarms, streamlined firmware updates and deep visibility into inventory, health and warranty details.

The Dell Management Plug-in enables users to schedule firmware updates for datacenters and clusters from within VMware vCenter. The Dell Management Plug-in provides a wizard that guides you through the steps to perform firmware updates on datacenter and cluster hosts.

# Introduction

The Dell Management Plug-in performs firmware updates for datacenters and clusters on complaint Dell PowerEdge 11th and 12th Generation servers. In addition, you can schedule the firmware update to run at a future time. This feature helps users to perform these firmware updates at the scheduled maintenance window without having to be present personally to attend the firmware update.

## Firmware update assurances

**Sequential execution**. To make sure all the hosts are not brought down to perform firmware updates, the firmware update is performed sequentially, one host at a time.

**Single failure stoppage**. If an update job fails on a server being updated, the existing jobs for that server continues; however the firmware update task stops and does not update any remaining servers.

**One firmware update job for each vCenter**. To avoid the possibility of multiple update jobs interacting with a server or cluster, only one firmware update job for each vCenter is allowed. If a firmware update is scheduled or running for a vCenter, a second firmware update job cannot be scheduled or invoked on that vCenter.

**Entering Maintenance Mode**. Hosts are placed into maintenance mode prior to installing updates. Before a host can enter maintenance mode, VMware requires that you power off or migrate off guest operating systems to another. You can configure the DRS features for a cluster to migrate the guest operating systems to another host automatically. If a host is not able to enter maintenance mode the firmware update task timeouts and fails.

**Exiting Maintenance Mode**. Once the updates for a host have completed, the host will be taken out of maintenance mode, if a host was in maintenance mode prior to the updates.

**NOTE:** If a host was in maintenance mode prior to the firmware update task, it is removed from maintenance mode after the firmware update jobs complete on the host.

# Server prerequisites for candidates of firmware updates for datacenters and clusters

For the Dell PowerEdge 11$^{th}$ and 12$^{th}$ generation server to update the firmware of datacenters and clusters, the server must fulfill the following requirements:

- Servers must have a valid iDRAC Express or Enterprise License.
- Server must be part of a Connection Profile.
- Server must be compliant in terms of firmware, CSIOR status, Hypervisor, and OMSA status (in case for Dell PowerEdge 11th generation servers).
    - At least the base level of firmware updates for Lifecycle Controller, iDRAC, and BIOS. See the product documentation for more details.
    - Conduct System Inventory on Reboot (CSIOR) must be enabled.
    - For Dell PowerEdge 11th generation servers, you must install a supported version of the OMSA agent. See product documentation for more details

## Firmware Repository prerequisites

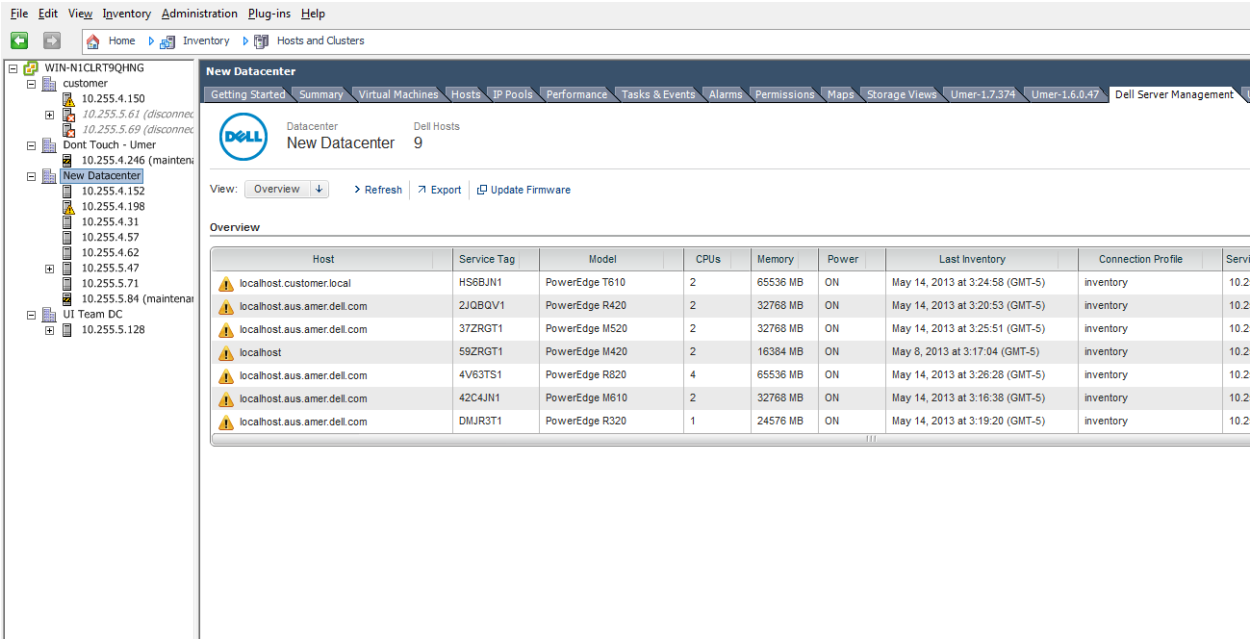
A firmware repository accessible to the Dell Management Plug-in appliance is required. The repository can be the default repository location of ftp.dell.com, or a repository created using the Dell Repository Manager.You can find information about creating a repository using the Dell Repository Manager in the whitepaper "*Using Dell Repository Manager with OpenManage Essentials & Dell™ Management Plug-in for VMware vCenter*"
http://en.community.dell.com/techcenter/extras/m/white_papers/20069223.aspx

## The Firmware Update Wizard for datacenters and clusters

The Dell Management Plug-in for VMware vCenter uses the Firmware Update Wizard on the datacenter or cluster page to step through the firmware update process and schedule update jobs.

1. In the vSphere Client, under the Inventory heading, select **Hosts and Clusters**.
2. In Hosts and Clusters, in the tree view, select a datacenter or a cluster and then select the **Dell Server Management** tab.

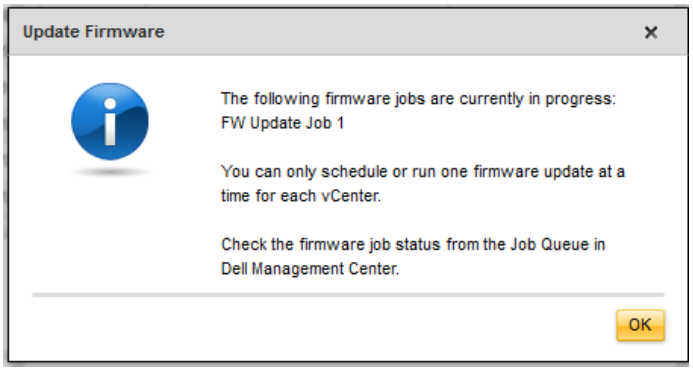
Figure 1. Host and cluster view.




3. Click **Update Firmware**.

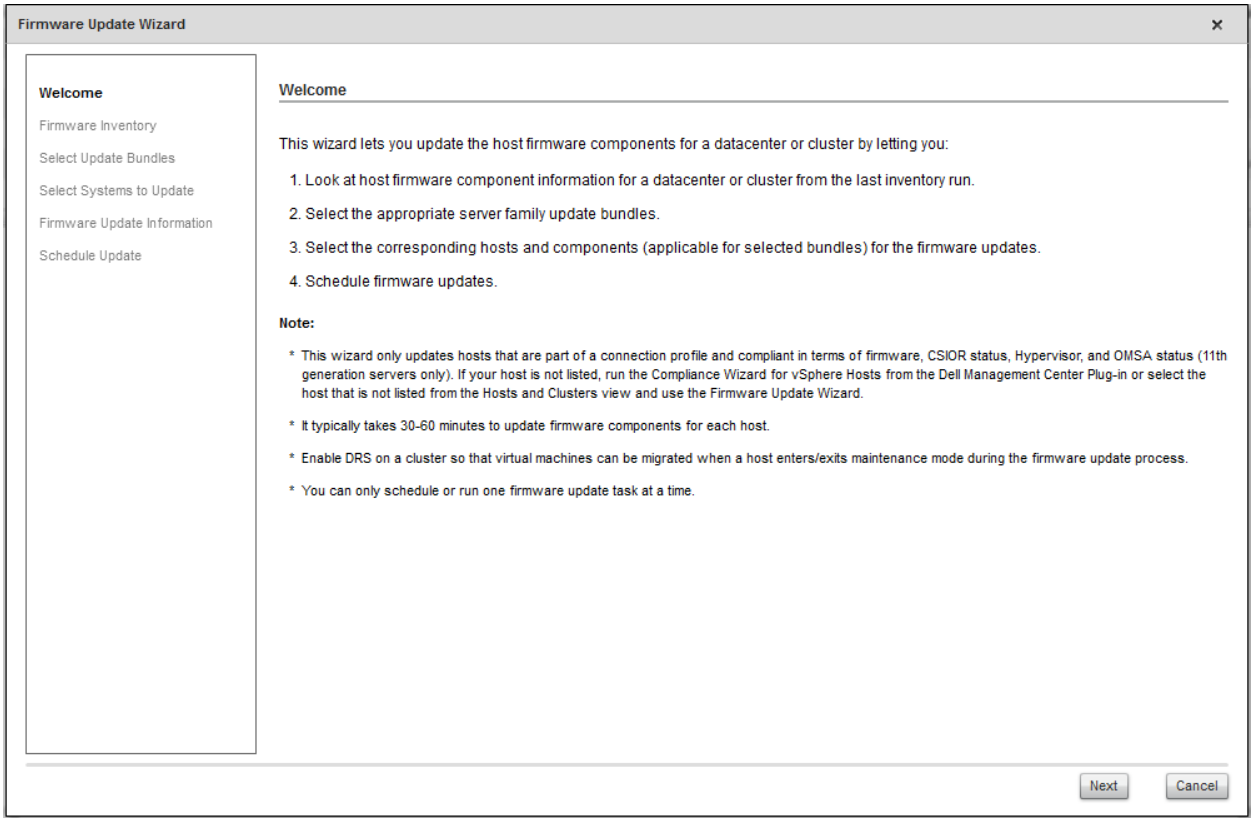
   If this link is not enabled or if you get a popup message when you click this option, then there is a firmware update job in progress or scheduled. Firmware updates can be performed on different vCenters simultaneously, however only one *in progress* firmware job for each vCenter is allowed. Dismiss the dialog. Wait, and try this again later. View the status of all jobs on the Firmware Update Jobs tab in Job Queues.

Figure 2. Job in progress warning



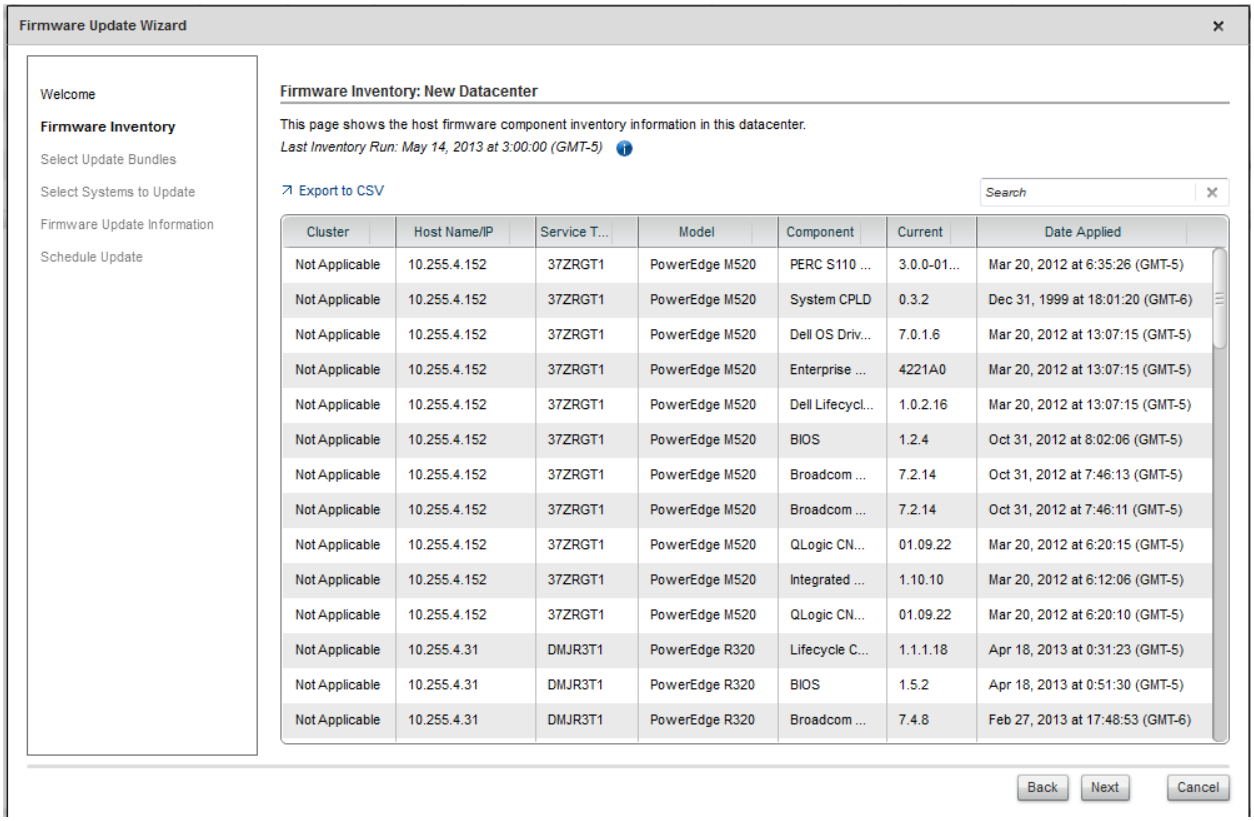

4. In the Welcome page, review the information about the update before proceeding with the wizard.

Figure 3. Welcome page




5. Click **Next**.
6. In the Firmware Inventory page, review the components that are currently installed on the servers. The list presented is using data from the last scheduled hardware inventory, not from a real-time data. This information is from the time the last inventory was run on the system. You should look at this time to determine the hardware inventory data is fresh, and that firmware wouldn't have changed since the last scheduled inventory. If the firmware was updated after the inventory was run, inventory does not reflect it until the next inventory is run.

Figure 4. Firmware inventory information for the datacenter.

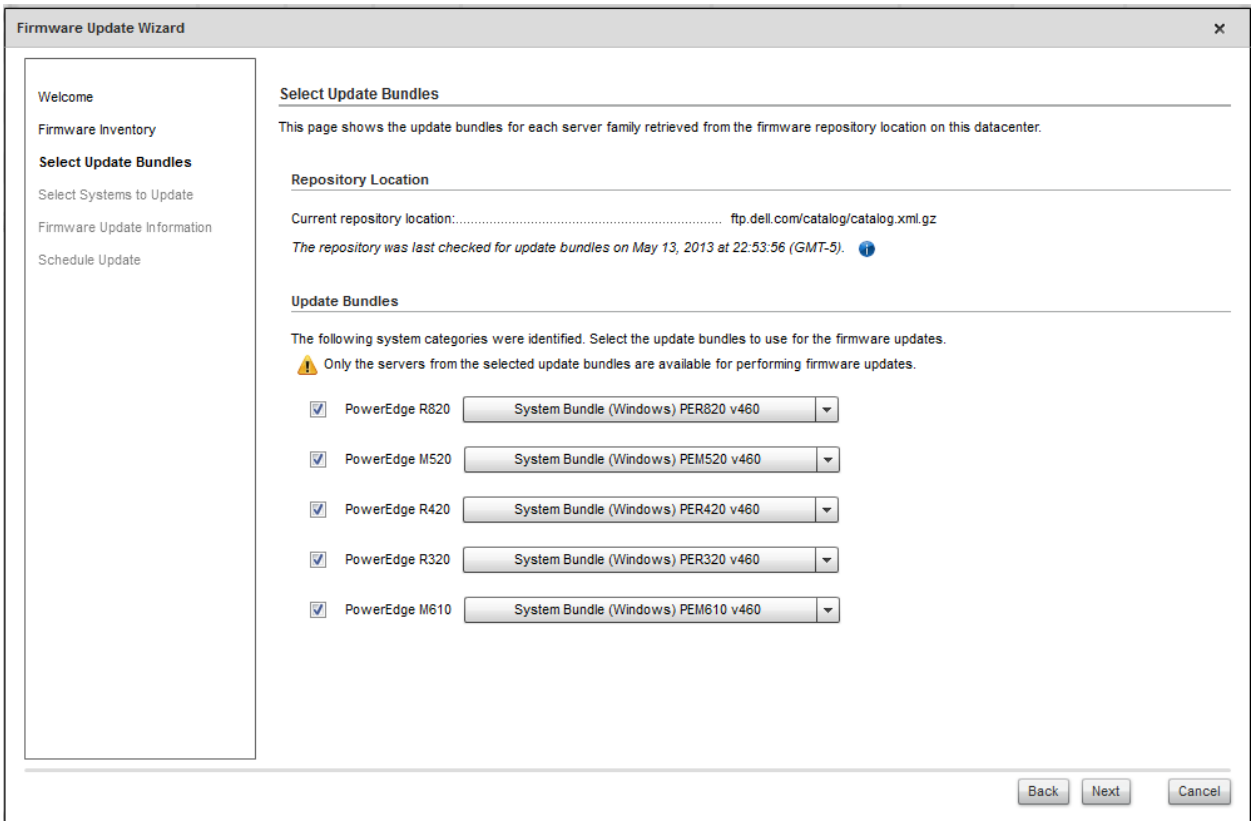



| Cluster | Host Name/IP | Service T... | Model | Component | Current | Date Applied |
|---|---|---|---|---|---|---|
| Not Applicable | 10.255.4.152 | 37ZRGT1 | PowerEdge M520 | PERC S110 ... | 3.0.0-01... | Mar 20, 2012 at 6:35:26 (GMT-5) |
| Not Applicable | 10.255.4.152 | 37ZRGT1 | PowerEdge M520 | System CPLD | 0.3.2 | Dec 31, 1999 at 18:01:20 (GMT-6) |
| Not Applicable | 10.255.4.152 | 37ZRGT1 | PowerEdge M520 | Dell OS Driv... | 7.0.1.6 | Mar 20, 2012 at 13:07:15 (GMT-5) |
| Not Applicable | 10.255.4.152 | 37ZRGT1 | PowerEdge M520 | Enterprise ... | 4221A0 | Mar 20, 2012 at 13:07:15 (GMT-5) |
| Not Applicable | 10.255.4.152 | 37ZRGT1 | PowerEdge M520 | Dell Lifecycl... | 1.0.2.16 | Mar 20, 2012 at 13:07:15 (GMT-5) |
| Not Applicable | 10.255.4.152 | 37ZRGT1 | PowerEdge M520 | BIOS | 1.2.4 | Oct 31, 2012 at 8:02:06 (GMT-5) |
| Not Applicable | 10.255.4.152 | 37ZRGT1 | PowerEdge M520 | Broadcom ... | 7.2.14 | Oct 31, 2012 at 7:46:13 (GMT-5) |
| Not Applicable | 10.255.4.152 | 37ZRGT1 | PowerEdge M520 | Broadcom ... | 7.2.14 | Oct 31, 2012 at 7:46:11 (GMT-5) |
| Not Applicable | 10.255.4.152 | 37ZRGT1 | PowerEdge M520 | QLogic CN... | 01.09.22 | Mar 20, 2012 at 6:20:15 (GMT-5) |
| Not Applicable | 10.255.4.152 | 37ZRGT1 | PowerEdge M520 | Integrated ... | 1.10.10 | Mar 20, 2012 at 6:12:06 (GMT-5) |
| Not Applicable | 10.255.4.152 | 37ZRGT1 | PowerEdge M520 | QLogic CN... | 01.09.22 | Mar 20, 2012 at 6:20:10 (GMT-5) |
| Not Applicable | 10.255.4.31 | DMJR3T1 | PowerEdge R320 | Lifecycle C... | 1.1.1.18 | Apr 18, 2013 at 0:31:23 (GMT-5) |
| Not Applicable | 10.255.4.31 | DMJR3T1 | PowerEdge R320 | BIOS | 1.5.2 | Apr 18, 2013 at 0:51:30 (GMT-5) |
| Not Applicable | 10.255.4.31 | DMJR3T1 | PowerEdge R320 | Broadcom ... | 7.4.8 | Feb 27, 2013 at 17:48:53 (GMT-6) |

**NOTE:** The Cluster column is populated with the cluster name the host is under. If the host is not associated with any cluster, then the column is populated with "*Not Applicable*".

7. Click **Next**.
8. In the Select Updated Bundles page, use the check boxes to select the updates.

Figure 5. Selecting the update bundles.

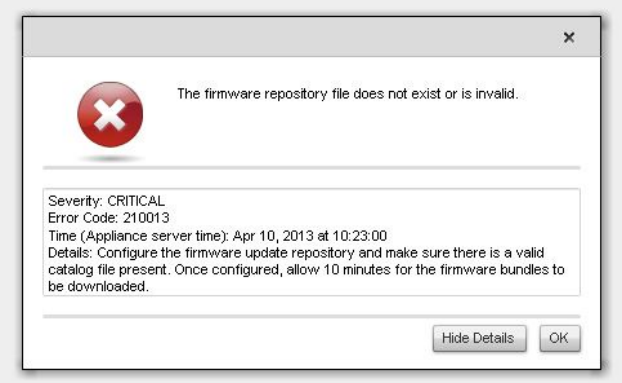



**NOTE**: The bundle information is from the time specified on this screen. If the repository information was changed after that time, the change is not reflected. To reflect the change, exit the wizard. Next, update the repository location from the **Dell Management Plug-in Settings > Firmware Repository**.

**NOTE:** The screen displays bundles from a cached catalog file downloaded from the repository location listed. If the screen displays the error shown below, there are three reasons:

- Repository was not configured.
- Repository was configured as Dell Online, but an invalid proxy was set.
- Repository was configured using custom repository, with invalid catalog content.

Figure 6. Error screen for firmware repository.



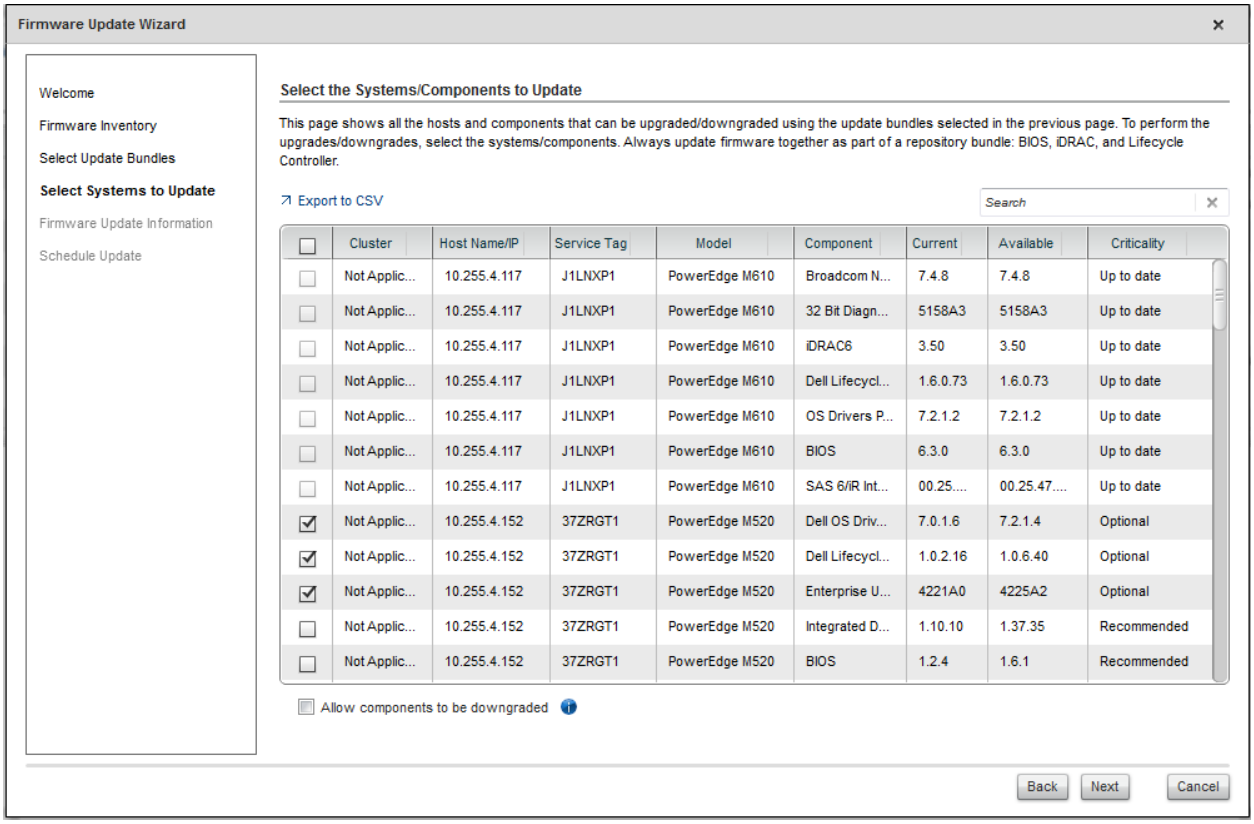
When changing the Firmware Repository, allow several minutes for the appliance repository catalog file to synchronize so that the new catalog file is used. When the catalog file is being downloaded and you visit the page above, an error mentioning the same is shown.

Figure 7. Repository is being updated by another process.

If a system does not have a bundle in the catalog, it is not listed. If multiple bundles are available for a system in the catalog, you can use the drop-down to select the bundle from which to load updates.

9. Click **Next**.
10. In the Select the Systems/Components to Update page, use the check boxes to select the components to upgrade or downgrade. If you want to downgrade, select the **Allow components to be downgraded** check box.

Figure 8. Select the systems/components to update.

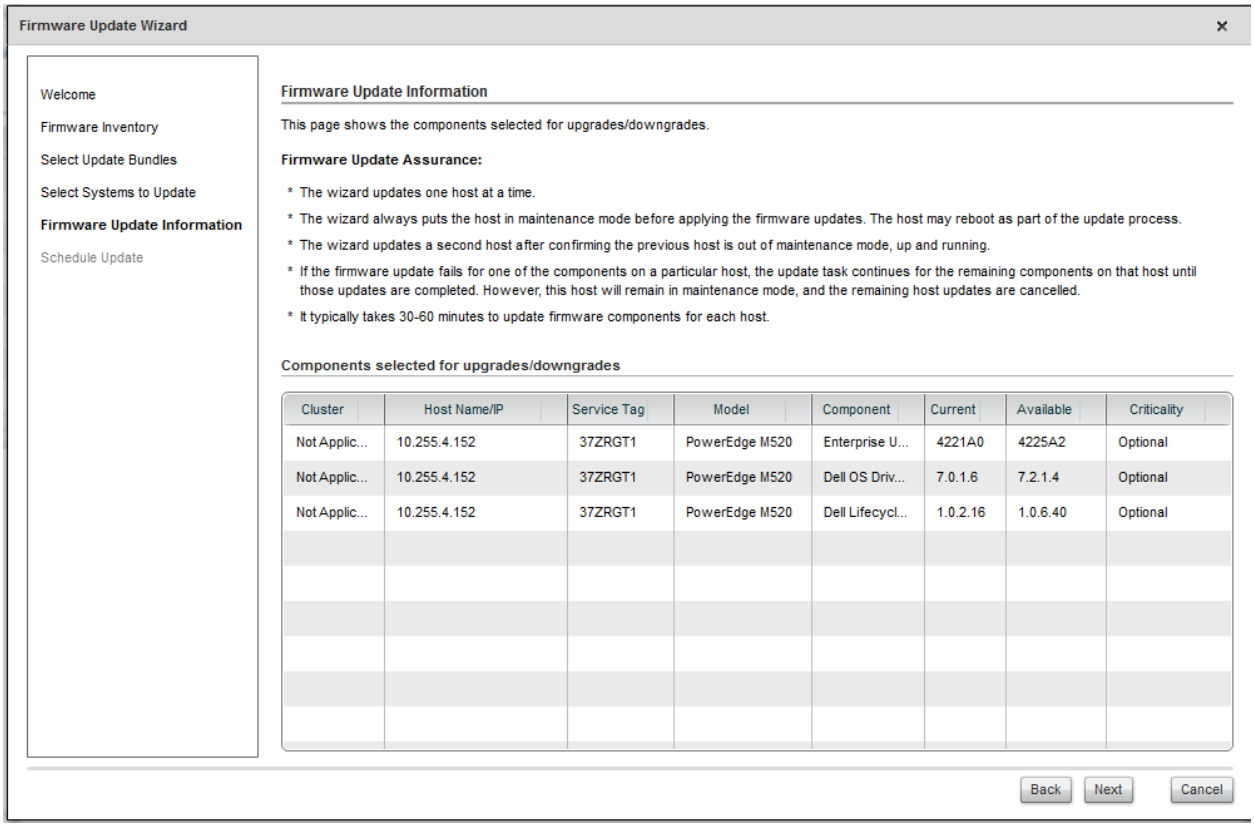



**NOTE**: If you select all components and some remain unselected, that means that there are no upgrades available for those components. You may select those components for a downgrade.

**CAUTION:** There are some known issues with specific pre-existing firmware versions that may cause a firmware update job to fail. Please read the release notes prior to selecting updates to identify and avoid any of these known issues. Also see the Known Firmware Compatibility issues section of this whitepaper.

11. Click **Next**.
12. In the **Firmware Update Information page**, review the components you have selected for an upgrade or downgrade.

Figure 9. Review the components you selected.




13. Click **Next**.
14. In the Schedule Firmware Updates page, under **Job Name**, do the following:
    - In the **Firmware Update Job Name** text box, type the firmware update job name.

      This is a mandatory field. If this text box is not filled in, this upgrade is blocked. Do not use a name that is already in use. If your purge this name, you may reuse it again.

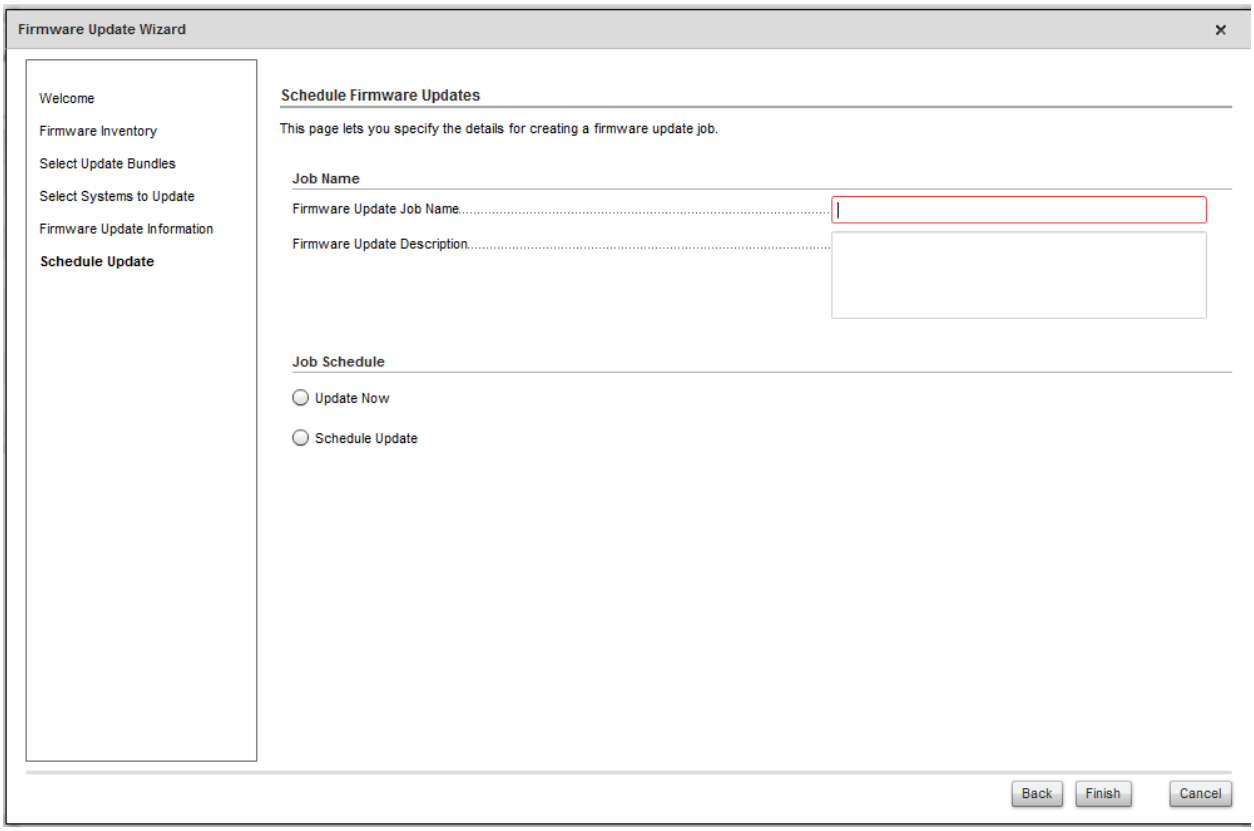
    - In the **Firmware Update Description**, type the description.
15. Under Job Schedule, do one of the following:

    **NOTE:** Selecting an option is mandatory. If one is not selected, the upgrade is blocked.

    - If you want to run the update job now, click **Update Now**, and then click **Finish**.
    - If you want to run the update job later, click **Schedule Update**, and then do the following:
        - In the **Calendar** box, select the month and day.
        - In the **Time** text box, type the time in HH:MM, and then click Finish.

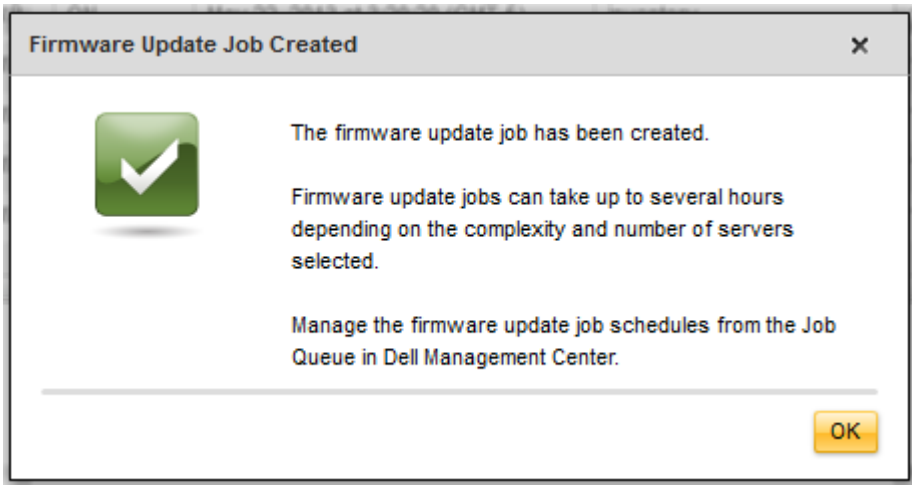
    **NOTE:** The time is the local timezone where your client is physically located. Invalid time values result in a blocked update.

Figure 10. Schedule your firmware update.




16. Clicking **Finish** creates and schedules the firmware update job. A popup appears to ask if you want to go to the Job Queue page. The Firmware Update task normally takes 30 to 60 minutes for each host to update the firmware.

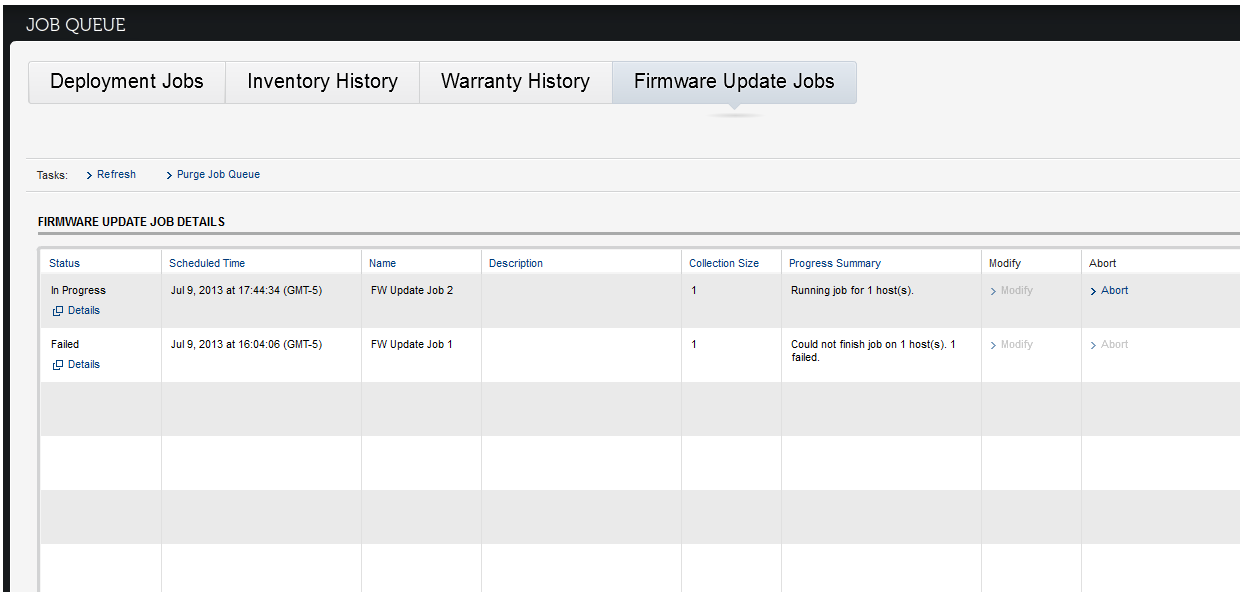
Figure 11. Job creation confirmation



# The Job Queue

The Job Queue is opened when you click the Job Queue tab in the Dell Management Center's left pane navigation menu. There are four tabs to the Job Queue: Deployment Jobs, Inventory History, Warranty History and Firmware Update.

Figure 12. Job Queue

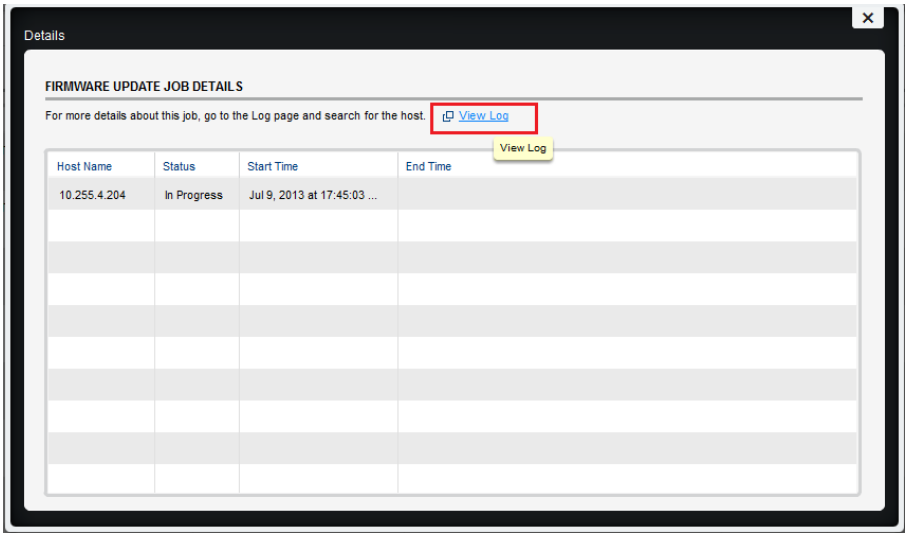



## Firmware Update jobs

The Firmware Update Job section of Job Queue shows a list of firmware Update jobs and their status. More details for the firmware update job are seen by clicking the *Details* link for the job in the Status column. This link opens a details window. When you hold the cursor over the Firmware Update Job Details column for 2 seconds, the column shows a history of the firmware update job's details.

To obtain the updated Job queue, click *Refresh*, and a new job queue displays.

Figure 13. Firmware Update Job Details




Clicking the Details link will show a link to the log page where the status of the updates can be tracked. Use the *Purge Job Queue* button to delete the Job queue based on the date and its status.

Figure 14. Purging firmware update jobs.

# Troubleshooting

**Issue1:** While running the Firmware Update wizard, at the datacenter or cluster level, an error message "*The firmware repository file does not exist or is invalid.*" may display. This may be due to a daily background process that was unable to download and cache the catalog file from the repository. This occurs if the catalog file is not reachable at the time the background process runs.

**Resolution/Workaround:** After resolving any catalog connectivity issues that may exist, you can re-initiate the background process by changing the firmware repository location and then setting it back to the original location. Allow about 5 minutes for the background process to complete.

**Version Affected: All**

**Issue 2:** After completing the firmware updates using the Dell Management Plug-in, an inventory may not be automatically initiated on the updated servers. The firmware versions displayed may show previous values until a new inventory has completed.

**Resolution/Workaround:** Verify inventory has completed successfully following a firmware update and prior to viewing firmware versions or scheduling any new firmware update jobs.

**Version Affected: All**

## Known firmware compatibility issues

**Issue1:** Using the Dell Management Plug-in to upgrade a Broadcom NetXtreme II 10Gigabit Ethernet adapter (BCM57712) from firmware version of 6.2.x or less, or downgrade to a firmware version of 6.2.x or less is not supported.

**Resolution/Workaround:** There is a known issue with the Broadcom NetXtreme II 10Gigabit Ethernet adapter (BCM57712) where updating the adapter from firmware version of 6.2.x or less, or downgrade to a firmware version of 6.2.x or less fails when the update is applied using the Lifecycle Controller. When attempting to perform this update using the Dell Management Plug-in, the update may incorrectly show that it completed successfully; however, the firmware update will have failed and remain at the previous level. One way to successfully update the adapter software for the Broadcom NetXtreme II 10Gigabit Ethernet adapter (BCM57712) is for customers to update the adapter firmware from an operating system.

Note: When using the one-to-many firmware update, avoid selecting to update the Broadcom NetXtreme II 10Gigabit Ethernet adapter (BCM57712) with a version of 6.2.x or less.

**Issue 2:** Using Dell Management Plug-in to update an Intel Network card with the firmware version of 13.5.2 is not supported.

**Resolution/Workaround:** There is a known issue with Dell PowerEdge 12th generation servers and some Intel Network cards with a firmware version of 13.5.2. Updating some models of Intel network cards at this version of firmware will fail when the firmware update is applied using the Lifecycle Controller. Customers with this version of firmware must update the network driver software using an operating system. If the Intel Network card has a version of firmware other than 13.5.2, you can update using Dell Management Plug-in. For more information, see http://en.community.dell.com/techcenter/b/techcenter/archive/2013/03/20/intel-network-controller-card-with-v13-5-2-firmware-cannot-be-upgraded-using-lifecycle-controller-to-v13-5-6.aspx

Note: When using the one-to-many firmware update, avoid selecting Intel network adapters that are at version 13.5.2, as this will fail and stop the update task from updating remaining servers.

# Conclusion

The Dell Management Plug-in contains many features to reduce complexity and help you manage and deploy Dell servers for use with VMware. Using the Firmware Update Wizard, you can easily update firmware on clusters or datacenters. Experience how the Dell Management Plug-in can speed deployment in your data center by downloading a free 1-host version. Browse to:

http://dell.com/vcenterplugin